



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/756,174	01/12/2004	J. Elon Graves	23236-07540	2100
758 FENWICK & WEST LLP SILICON VALLEY CENTER 801 CALIFORNIA STREET MOUNTAIN VIEW, CA 94041			EXAMINER SINGH, DALZID E	
			ART UNIT	PAPER NUMBER
			2613	
SHORTENED STATUTORY PERIOD OF RESPONSE		MAIL DATE	DELIVERY MODE	
3 MONTHS		03/27/2007	PAPER	

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

**Office Action Summary**

Application No.

10/756,174

Applicant(s)

GRAVES, J. ELON

Examiner

Dalzd Singh

Art Unit

2613

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 12 January 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-35 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1-23 and 26-35 is/are allowed.
- 6) ☒ Claim(s) 24 and 25 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

## **DETAILED ACTION**

### ***Claim Rejections - 35 USC § 112***

1. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

2. Claims 24 and 25 are rejected under 35 U.S.C. 112, first paragraph, as based on a disclosure which is not enabling. The steps shown in Fig. 2 and described on paragraphs [0025-0029] are critical or essential to the practice of the invention, but not included in the claim(s) is not enabled by the disclosure. See *In re Mayhew*, 527 F.2d 1229, 188 USPQ 356 (CCPA 1976).

The claim recites a method of acquiring a target object using adaptive optics, however, the steps are involved in aligning and maintaining such alignment. The claim does not recite critical or essential steps to the practice of the invention.

### ***Claim Rejections - 35 USC § 102***

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 24 and 25 are rejected under 35 U.S.C. 102(b) as being anticipated by Wisner et al (US Patent No. 4,271,355).

Regarding claim 24 (as far as understood in view of the 112 rejection), Wisner et al disclose method for acquiring a target object using an adaptive optics imaging system comprising a wavefront sensor (see Figs. 1 and 2), the method comprising: aligning the wavefront sensor to a reference object; aligning the target object to the reference object; and maintaining alignment of the target object with the wavefront sensor (see col. 4, lines 10-67 to col. 5, lines 1-24; monitor beam is used as reference to acquire alignment by controlling the servo system; it is inherent to maintain alignment once alignment is obtained).

Regarding claim 25, Wisner et al disclose that wherein the adaptive optics imaging system further comprises a variable phase element and wherein the step of aligning the wavefront sensor to a reference object comprises adjusting the variable phase element to align the wavefront sensor to the reference object; and the step of maintaining alignment of the target object with the wavefront sensor comprises adjusting the variable phase element to maintain alignment of the target object with the wavefront sensor (as discussed above, Wisner et al disclose adjusting the phase element).

***Allowable Subject Matter***

5. Claims 1-23 are allowed.
6. The following is a statement of reasons for the indication of allowable subject matter:

Claim 1 is allowed because the prior art of record US Pub. No. 2004/0141752 to Shelton et al does not teach or disclose an adaptive optics imaging system with object acquisition capability comprising:

a primary imaging subsystem comprising:

- a telescope having an optical axis;

- a variable phase device located on the optical axis; and

- a wavefront sensor located on the optical axis downstream of the variable phase device;

an acquisition imaging subsystem located in a fixed position relative to the primary imaging subsystem, the acquisition imaging subsystem comprising:

- an optical imager having an optical axis;

- a reference object located in an object plane of the optical imager; and

- an acquisition detector located at an image plane of the optical imager;

- a beamsplitter that splits the telescope's optical axis upstream of the variable phase device and also splits the optical imager's optical axis, wherein the wavefront sensor is located at an image plane of the optical imager, the acquisition detector is

located at an image plane of the telescope, and a field of view of the acquisition detector is larger than a field of view of the wavefront sensor;

a first controller that controls the variable phase device to align the reference object and the wavefront sensor; and

a second controller that controls a beam steering mechanism for the telescope, to align a target object for the telescope and the reference object.

Claim 18 is allowed because the prior art of record US Pub. No. 2004/0141752 to Shelton et al does not teach or disclose a method for acquiring a target object using an adaptive optics imaging system comprising a telescope having an optical axis, and a variable phase device and a wavefront sensor located on the optical axis, the method comprising:

providing a reference object;

imaging the reference object onto an acquisition detector located at an image plane of an optical imager;

splitting the optical axis of the telescope upstream of the variable phase device and splitting an optical axis of the optical imager, wherein the wavefront sensor is located at an image plane of the optical imager and the acquisition detector is located at an image plane of the telescope, and a field of view of the acquisition detector is larger than a field of view of the wavefront sensor;

controlling the variable phase device to align the reference object and the wavefront sensor; and

controlling a beam steering mechanism located in the telescope's optical axis upstream of the beamsplitter, to align a target object for the telescope and the reference object.

### ***Conclusion***

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Friedman et al (US Patent No. 6,278,100) is cited to show remote sensing optical systems.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dalzid Singh whose telephone number is (571) 272-3029. The examiner can normally be reached on Mon-Fri 9am - 5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jason Chan can be reached on (571) 272-3022. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

DS  
March 22, 2007

DALZID SINGH  
PRIMARY EXAMINER

*Dalzid Singh*